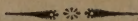
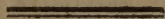


A
CONCISE DESCRIPTION
OF
SCHOOLEY'S MOUNTAIN,
IN
NEW-JERSEY,
WITH SOME EXPERIMENTS ON THE WATER OF ITS
CHALYBEATE SPRING.



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A
CONCISE DESCRIPTION,
&c.

THERE had been so much conversation about Schooley's mountain, that, in the beginning of July, 1810, I executed the desire I had long entertained, of visiting it.

Schooley's mountain is part of a chain which extends in a north-easterly, and south-westerly direction, across the state of New-Jersey. It may be traced from the Highlands of New-York. Towards the Hudson, its ridges divide the plains of Rockland county from those of Orange, being denominated the Haverstraw, Warwick, Skunemunk, and Stirling mountains, and being distinguished locally by several other names. Towards the Delaware, it separates the upper waters of the Raritan from those of the Musconetconck, and passing from Sussex through Morris and Hunterdon counties, is called, somewhat to the southward of Philipsburgh, the Musconetconck mountain. The more noted portion of its middle region is termed Schuyl's Hills, or Schooley's Mountain. The latter name is the most prevalent, and is derived from a family which was formerly a considerable proprietor of the soil thereabout. The former appellation is probably a mere abbreviation or corruption of it.

This ridge discharges the water from its north-west side, partly through the Wallkill, into the Hudson, a

little to the eastward of Esopus, after traversing Sussex county, in New-Jersey, and Orange and Ulster, in New-York. Part also empties into the Hudson through Murderer's Creek, at New-Windsor. Another portion is collected into the Musconetcunck river ; and running almost parallel with the mountain, falls into the Delaware, not many miles south of Eastown. The water from the south-east side feeds the upper streams of the Pasaick, which, after visiting Orange, Rockland, Morris, Essex, and Bergen counties, falls into Staten island sound, to the southward of Newark.—The stream called the Black river beyond Mendham, and that termed South-branch, watering Dutch valley, neither of them reach the Delaware, but empty into the Raritan, some distance above Brunswick.

Thus these heights completely divide the waters of New-Jersey. Not a single stream is known to pierce them. From their north-western slope, all their streams find their way into the Hudson and the Delaware. From their south-eastern declivity, their currents travel to the ocean by Newark and Raritan bays. They have, however, no pretensions to be classed with the Shawangunk mountains, which are a distinct chain, and make part of the great Alleghany, that traverses the continent to the confines of Georgia. Nor have they any connexion with the Kaatskill mountains, which are themselves quite detached from the Shawangunk. Schooley's mountain is of more moderate elevation than either. Geometrical measurement has ascertained that the height of Schooley's mountain above its immediate base, is more than six hundred feet. And a calculation, made by approximation, on the falls of water at the different mill-dams along the hurrying channel of the Musconetcunck, to its junction with the Delaware, and on the descent thence to

Trenton, make the position of that base to be nearly five hundred feet more above tide-water. The elevation above the level of the ocean does not, therefore, in all probability, much exceed eleven hundred feet. And this is about the height ascribed to Anthony's Nose, in the Highlands of New-York, by Mr. Knight.

The elevation is, nevertheless, considerable enough to influence its temperature. The heats of summer are not so great as in the valleys. Droughts are less common and pinching. Snow falls earlier, and lies longer than in the adjacent plains. The warmth of a copious spring of pure water, as it issued out of the sand near the top of the mountain, was only 50 degrees, while the temperature of the water gushing from the briskest springs on the north-side of Long-island, and drawn from the deepest wells at New-York, is 54 degrees. The spring water on the summit of Schooley's mountain is, therefore, four degrees colder than that around New-York.

This mountain is not a mass of stratified rocks, piled upon each other from bottom to top. There is no peculiar difficulty in travelling over it. The predominating materials are clay and sand, forming a good loam; which, though generally not argillaceous enough for the formation of bricks, is, at the same time, gravelly enough for the growth of grass and grain. Yet rocks are thickly distributed over its face and along its sides. They are mostly detached, though some of them are of large dimensions. They consist chiefly of feldspar and quartz: the quartz is prone to be semi-pellucid, and is granular or angular, resembling coarse marine salt. The feldspar is mostly whitish, sometimes reddish, and presents less of the polished fracture than the American feldspars usually do. It has the appearance of a more imperfect formation, or of

having undergone a partial decomposition. These two ingredients make up the bulk of the rocks. Many masses may be examined without observing a vestige of mica. Abundant as mica is almost every where, in these parts, with the mixtures of feldspar and quartz, in our primitive rocks, it is remarkably deficient here. Now and then a little shistus, or hornetblende, is found embodied and compacted with the quartz and feldspar. Grains of yellow pyrites also sometimes occur. Rust, ochre, and other indications of iron, are dispersed extensively, both through the rocks and the soil. Iron ore is indeed so plentiful, that furnaces are in operation, both in the eastern and western districts of the chain. Much of it is magnetical, and its action is so powerful upon the needle, that surveyors of land often find it very difficult to employ the compass. It would be possible to collect great quantities of the magnet, and of other ores of iron in the middle region. Towards the foot of the hills, limestone is found skirting the valleys along, and is calcined in quantity sufficient for all economical uses.

Among the natural productions thereabout, are masses of excellent flint stones. They lie along the vallies and side hills, where they have been washed bare ; and are sufficient in quantity and quality for domestic supply of our musketry. They are more pure, and of a better fracture than those contained in the lime stone near Niagara. And when this important article of public defence shall be thought worthy of being improved by the citizens, there seems to be in New-Jersey an inexhaustible supply for our fire-arms.

A turnpike road has been completed from the city of Jersey, at Powleshook, to the summit of Schooley's mountain. The travelling is excellent, the whole distance. This

is just fifty miles from New-York city. Estimating the width of the Hudson to be two miles, the distance to Newark is nine, to Springfield seven, to Chatham five, to Morristown seven, to Mendham six, to Black-river six, to Dutch valley five, and to the Mineral Spring on the eastern or further side of the mountain, three miles. Through such a succession of thriving villages, and amidst a country pleasingly checkered with forests and farms, the rise of the first five hundred feet is surmounted in about forty-seven miles, as the traveller passes over a surface of easy elevations and depressions. The remaining six hundred feet are ascended in less than two of the remaining miles, between Dutch-valley and the summit. The principal part of the remainder, is a descent to the Spring on the opposite declivity.

An able horse will carry a chair hither from New-York, in a summer's day ; or return thence between the rising and setting of the sun. From the top of the mountain one finished turnpike is continued northward, to Sussex, another westward, to Eastown, and a third eastward, to New-York. It is in contemplation to open a fourth from the same point, to proceed in a course southwardly, direct to Trenton.

The Mineral Spring which has been mentioned, has given much celebrity to the neighbouring region.— It is said to have been known to the native Indians, and to have been employed by them as a remedy. The white people have resorted to it almost ever since the settlement of the country. Remarkable cures are ascribed to it. And some persons have been in the habit of visiting it season after season, for the purpose of being benefited by its wholesome properties.

It is situated in the town of Washington, in the

County of Morris. It is, in strictness, a rill which issues from a fissure in the perpendicular side of one of the above-described rocks, on its eastern exposure. The place of discharge is, perhaps, between forty and fifty feet above the level of a brook which gurgles over the stones, and foams adown the rocks in its channel beneath. The extremity of a wooden leader, is so adapted to the crack in the rock as to receive the water, and convey it to the platform where the drinkers assemble ; and to the recesses, whither the bathers retire.

Its temperature is rather more than six degrees warmer than that of the spring water near the summit. The mineral water, as it pours from the spout, possesses a heat somewhat warmer than fifty-six degrees. This is about the same which the slower springs and the shallower wells around New-York possess.

The quantity of water which it affords can easily be measured. By experiment, it appeared to discharge a gallon in about two minutes and a half. At this rate, the amount would be twenty-four gallons per hour. But, allowance is to be made for leakage and waste ; inasmuch as the conduit does not collect the whole. Suppose this to be six gallons more. Then the quantity running out, will amount to thirty gallons per hour. Some trials are reported to have shown a rather more abundant flow. On the whole, it may be stated, with tolerable correctness, that the fountain within the bowels of the mountain emits, from this opening, a quantity of water, not varying greatly from a barrel per hour, or six hogsheads per day. The quantity is not observed to vary under any changes of season or weather.

The spouts which convey the water are lined with a yellowish deposit. The like sediment incrusts the reservoirs at the bathing house. The earth and stones through which the water soaks away, present a similar ochreous appearance. Where the boards contain astringent matter, a dark purple, or blackish colour is formed.

The presence of iron being thus indicated, a few experiments were made to determine the matter more clearly,

A bright blue was produced, on adding the prussiate of pot-ash to the water.

Green leaves of the common chesnut-tree, (*fagus castanea*,) on being bruised and infused in the water, formed a pale purple.

Those of chesnut-oak, (*quercus prinus monticola*,) yielded a brighter purple.

Those of the Sumach, (*Rhus glabrum*,) quickly turned to a purple.

Fresh lacerated leaves of the maple, (*acer rubrum*,) immediately formed a deep purple.

Hickory leaves, (*juglans vulgaris*,) made a faint dusky hue.

Black-oak leaves, (*quercus nigra*,) struck a darker colour.

Butternut leaves, (*juglans cinerea*,) afforded a dusky brown.

The waters of the spring, mixed with brandy, made a mixture of a dark and unsightly colour.

An infusion of green tea, formed browns, purples, and blacks, according to its strength and proportion.

The chalybeate character of the water being thus established by so many tests, attempts were made to ascertain whether there was any gaseous impregnation.

For this purpose, glasses were inverted in a convenient vessel, receiving the stream immediately from the spout. But not a bubble of air was collected, other than common spring water affords.

To determine whether any carbonic acid was combined with the water in a form not spontaneously separable, lime-water was mixed with it; but no change of colour was perceptible in the mixture.

Various proportions of the spring water and lime-water were mingled in repeated experiments, without effecting any cloudiness, or causing any precipitate.

Afterwards, as a test to the goodness of the lime-water, the milky hue and carbonic precipitate of the lime was instantly produced, by breathing through a tube into the mixture of waters, air which had undergone the respiratory operation of the lungs.

There was thus no evidence of any carbonic acid at all.

When the water of the spring was suffered to stand in the open atmosphere, and acquire the summer temperature, by receiving twenty or more degrees of heat, some air bubbles were distinguishable on the sides of the vessel; but they were only such as any cold water would exhibit under equal circumstances.

As there was no calcarious incrustation at the spring, there was reason to believe the water destitute of lime. On adding to it oxalic acid, there was no change of colour produced. Whence it may be inferred, that lime makes no part of the constitution of this fluid.

To enable a judgment to be formed, whether any other earths were combined with the water, soda and pot-ash were severally and repeatedly added. The precipitates were, however, so small, and so slowly

produced, that there was ground to suppose the presence of earthy matter was very inconsiderable; and that there was no metallic impregnation, except that of iron.

The nitrate of silver caused a whitish appearance; but not in so considerable a degree as it does in the water of New-York, constantly drunk by the inhabitants. The cloudiness was indeed not more considerable than rain water along the sea-coast is occasionally known to present, when subjected to the same test. The tinge of muriatic acid hereby indicated, probably arises from a faint solution of sea salt.

There is, notwithstanding, a weak acid of some kind in the Schooley's mountain mineral water. If litmus paper be exposed to the water as it issues from the rock, the blue is gradually changed to a reddish; and on the addition of an alkali, the acquired colour vanishes. What the nature of this inconsiderable portion of uncombined acid may be, is not perfectly easy to determine. Its presence is attended with the flavour which water derives from running over decayed leaves, and draining through a soil abounding with the living and dead roots of trees, shrubs, and sylvatic plants. Former experiments have proved to me the existence of an acid in the rotten wood which over-spreads the American forests. And water, passing through a stratum of vegetable mould, is known to receive what is called the *woody* taste. It is, therefore, presumable, that the rain water receives a tincture from the thick layer of vegetable mould through which it is strained, and carries the flavour of it to the fountain. The peculiarities of this feeble acid, like that of numerous others we meet with in practice,

does not seem to be defined in chemistry as yet by discriminating characters.

The iron of this mineral water is very easily separated. Exposure to the atmosphere is followed by a metallic precipitation. Transportation to a distance, as bottles are commonly corked, is attended with a deposition of the iron. The water, after having been carried to New-York, when subjected to experiment in my house, gave no evidence of a chalybeate quality, when tested by the Prussian alkali and spirituous tincture of galls. This same water, after being boiled in a kettle, makes excellent tea. The heat of ebullition seems to separate the ferruginous ingredient; and the infusion is thereby freed from all dusky or black tint. Still, if this same infusion of green tea is mixed with water fresh from the spring, a dark and disagreeable hue is instantly produced. A short exposure to the heat of 212° , thus converts this mineral water into a good tea-water. It is employed for this purpose occasionally.

If there is any thing that deserves the name of a pure chalybeate water in the world, this would seem to be such a composition. The iron appears to be united with the water without the aid of carbonic, or indeed any other acid; for the weak acidity detected by litmus, can scarcely be considered as contributing to its solution. Some part of the iron ore universally diffused among the minerals hereabout, is in a state proper for water to act upon, and to produce the martial impregnation remarkably free from other admixtures.

Schooley's Mountain, July 10, 1810.

